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COMMITTEE ON EDUCATIONAL RESEARCH
The University of Alberta

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The author reports a study of the validity and efficiency of three types of principal ratings as criteria for admission to the university. The three ratings, compared with the use of scores on Departmental Examinations, were: Principal Rating Score, Rank-in-Class, and Estimate of Success in University.

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Application of Alberta Admissions Research Findings in a Quasi-Operational Setting

Black and Knowles, in a series of articles in the period June, 1965 to June, 1966, reported the results of an admissions research study conducted at The University of Alberta. One major finding was the comparability of the Principal's Grade XII Rating scores to those of the Grade XII Departmental Examination for admission purposes. When the author became Registrar of the then University of Alberta at Calgary, and shortly thereafter, The University of Calgary, he undertook a further study of principals' ratings in a setting more closely approximating their operational use. This paper reports the findings of the study.

In addition to the major findings, the earlier work done at The University of Alberta revealed that use of the admission average was only slightly less effective than multiple regression techniques using individual subjects, so much so that no advantage could be seen for the more sophisticated techniques using either the Departmental or Principal's Rating scores. The normalization of scores contributed little to improve prediction of success. Arguments for the simpler techniques and earlier availability of Principal's Ratings more than offset the minimal losses in predictive efficiency from their use. These losses were not uniform, however. Not only were differences found between large and small high school graduates, but the Principal's Ratings were found to be more effective than the Departmental scores in predicting the success of male students from small high schools. A small high school was defined as

any high school having less than twenty-five teachers. Finally, there were differences noted between Faculties.

The present study sought to compare the equivalence of the Grade XII Departmental Examination scores to three principal's ratings as alternate admission criterion to the University of Calgary for Alberta high school graduates considering sex and location and size of the high school. No consideration was given to Faculty or School entered. The primary emphasis was placed on the equivalence of admission procedures, not on ultimate success or failure in the freshman year although this has not been ignored. The admission requirements to the University at the time of the study were six Grade XII Departmental Examination scores in designated areas depending upon Faculty or School, no score of which was below 50 and an overall average of not less than 60.0.

Collection of Data

In April 1966 a letter was sent to all Alberta high school principals explaining the purpose of the study, its planned procedures, and asking for their cooperation in the project. Each was asked to have any graduating Grade XII student contemplating attending the University complete an application for admission form and to submit a Confidential Principal's Report (CPR) form on the student's behalf. A sample form is shown in Figure 1.

Three principals' ratings were determined from the CPR form: the Principal's Rating Average (PRA), Rank-in-Class (RIC), and the Estimate of University Success (EUS). The former presumably was calculated by the principal from the individual subject ratings, while the latter two ratings were placed on a five point scale in ascending order of merit, i.e., a 5 would indicate a student standing in the top fifth of his class, or one whose chances of success in university work were perceived as excellent. The Departmental Average (DEA) was determined from the scores reported to the University through the Departmental Courtesy Books. These marks represent the first-try grades, but do not include later revisions based on paper re-reads and supplementals.

Study Sample

In all, 414 CPR's were returned to the Registrar's Office by the study deadline of June 15, 1966. Those received after this date were discarded. Of these 414, 78 were rejected out of hand for the following reasons: 35 were atypical cases from junior colleges, 2 were from the Northwest Territories, 7 were either adult students or students with major programme disruptions, and 34 were from high schools whose principals did not complete the CPR other than to sign their names.[1]

CANCELLED
PRIVILEGED INFORMATION

The University of Calgary
PRINCIPAL'S CONFIDENTIAL RETURN FOR PROVISIONAL ADMISSION OF FRESHMEN

Note: This is for Experimental Purposes Only and NOT to be placed in Student's file.

Student's Name _____ I.D. No. _____

Address _____ Faculty _____

_____

Score if Departmental already written _____

Principal's Rating (Check Appropriate Box)

	Below 50	50	55	60	65	70	75	80	Over 80	
English 30			■							69
Social Studies 30				■						59
Mathematics 30			■							60
Mathematics 31										
Chemistry 30				■						72
Physics 30		■								68
Biology 30										
Biology 32										
French 30				■						72
German 30										
Latin 30										
Ukrianian 30										
Music 30										

Estimated Student's Matriculation Average

Below 50	50	55	60	65	70	75	80	Over 80
			■					

66.66%

In your school, how would this student rank in comparison with those students in the matriculation program?

Bottom fifth		Middle fifth	■	top fifth

How many students are in this year's Grade XII matriculation program in your school? _____

How many teachers are there on staff in your high school? _____

In your opinion, what are this student's chances of success in University?

Poor	Fair	Good	Very Good	Excellent
		■		

If there are other comments you wish to make about this student, please use the back of this page.

Signed _____ Date _____

School _____ Location _____

Figure 1.

Besides this deficiency in returns, it must also be recognized that those students who participated in this study were atypical in that early application for University admission is not a known characteristic of Alberta high school students. For the year in question, of those students being admitted to the University as freshmen, one in five (N= 1209) had submitted an application for admission *after* the official deadline of August 1, 1966.

The remaining 336 cases for whom at least partial ratings were submitted by the high schools, were followed through two successive years of their University programme, i.e., 1966-67 and 1967-68. These data are presented in Table 1.

TABLE 1

SUMMARY OF PROGRESS OF 336 GRADE XII STUDENTS EXPRESSING INTEREST IN ATTENDING THE UNIVERSITY OF CALGARY TO THE END OF THE SECOND YEAR OF THEIR UNIVERSTIY PROGRAM BY SEX AND LOCATION OF HIGH SCHOOL

Location of High School	URBAN		RURAL		
Sex	Male	Female	Male	Female	Total
1. Number whose principal submitted a CPR Form	137	68	59	72	336
2. Number submitting an Application for Admission Form	124	65	59	70	318
3. Number given admission status to the University	110	61	48	60	279
4. Number formally registering in first year of program	95	55	39	43	232
5. Success in first year of program: a. Withdrawing	8	2	7	-	17
b. Failing	15	4	13	1	33
c. Passing	72	49	19	42	182
6. Success in second year of program of those passing first year:					
a. Did not return	7	5	1	4	17
b. Withdrawing	10	4	1	6	21
c. Failing	7	3	5	2	17
d. Passing	48	37	12	30	127
7. Number of students who did not apply, were not admitted, did not register, or who withdrew or failed the first year of their program in the next academic year:					
a. No further contact	45	15	27	21	108
b. Withdrawing	4	1	4	1	10
c. Failing	7	-	1	3	11
d. Passing	9	3	8	5	25
TOTAL	65	19	40	30	154

In regard to Table 1, it is appropriate to discuss some of the assumptions and definitions at this time. First, it is an assumption that notwithstanding differential admission requirements to each Faculty or School, both admission and performance prerequisites for success are deemed to be equivalent across the University. The total sample has been categorized by sex and location of the high school from which the student graduated. Originally, it had been planned to do a large/small high school categorization as well using the 25 or more teachers on staff as the cutting point. It was found in the analysis of the data that only 8 of 134 cases from small high schools were enrolled in city, i.e., urban, high schools, and only 6 of 202 cases were from large high schools located in rural areas. Therefore, it seemed reasonable to divide the sample into graduates of rural and urban high schools with some confidence that the same division could also mean small and large schols, respectively.

Of the study sample of 336 cases, 318 made formal application for admission to the University of which 279 were formally admitted to the University. Between being admitted and the start of classes in September, 47 did not register. An additional 17 cases withdrew after the start of classes. Thirty-three failed their first year but 182 performed sufficiently well to enter the second year of their programme.

The definition of pass or failure is based on University promotion policy for the Faculty or School concerned in effect during the 1966-67 academic year. A failing student for the purposes of this study is defined as one whose performance was so weak that he was required either to withdraw from the University for at least one year, or to repeat his freshman year. A passing student was defined as one whose performance was such that he was able to enter the second year of his programme even though he might be carrying one or even two failures. In 1967-68, the promotion policies were changed. However, the data reported for the second year (1967-68) in Table 1 uses the 1966-67 promotional policies as the criterion for success or failure.

Of the 182 students in the study who are eligible to enter the second year of their programme at the University, 17 did not register and a further 21 withdrew during the year. Seventeen failed leaving 127 clear to enter the third year of their programme.

Of the 154 students in the samole who had been "lost" between the initial expression of interest in attending the University, i.e., the submission of a CPR form, and the end of the first year, no further contact was made by 108 while 46 registered in the second year of the study either as freshman (new and repeats) or as transfers from a junior college (second year of programme). Of these 46 cases, 10 withdrew during the year, 11 failed, while 25 cleared their year successfully.

The study sample of 336 was examined by sex and location of high school as to its representativeness of the 1966 fall freshman intake. The data for the freshman class are based on the data for Alberta students provided for the Dominion Bureau of Statistics Annual Report. This Report which is based on the registration status as of December 1, includes only those students who were actually in attendance as of that date. The study sample used for these comparisons included only those students registering after admission, i.e., as of September 30. It is known from other statistics compiled by the Registrar's Office that over half of the students who withdraw during the year will do so by the end of October. Such a correction was not made in the study sample reported in Table 2 for it was clear that this would not radically change the general picture of the degree of representativeness of the sample.

The study sample is not representative of the 1966 Alberta freshman intake. Significantly more Rural students responded to the appeal for early application than did Urban students. Within the Urban and Rural total samples, however, the distributions by sex are not significantly different statistically. Further, while the sample was not sufficiently large to establish meaningful representativeness by Faculty and School, this was examined. Besides confirming the higher proportional representation by rural students, certain other anomalies were found. For example, of 39 Rural Males in the total Alberta freshman class entering Engineering, 22 were included in the study sample. It is significant to note that of the 13 Rural Males in the study sample failing their first year, 8 were registered in Engineering.

It was concluded that while there were very real limitations in the study sample as being representative of the 1966 Alberta freshman class, this would not invalidate the general findings of the current study. These were believed to be of sufficient interest if for no other reason than to establish trends for subsequent investigations. Further, in light of recent statements by Department of Education officials of long-term intent to eventually phase out the Grade XII Departmental examinations as known in their present form, it is apparent that a variety of alternate methods of accessing student potential for university work should be actively examined now when time will permit empirical evaluation.

Method of Analysis

The method of analysing the data is illustrated in Table 3 for the Total sample. This Table is based on those students who submitted applications for admission and who were subsequently admitted to the University. The percentage of the study sample eligible for admission at each cutting score for each of the four variables, Departmental First-Try Average (DEA), Principal's Rating Average (PRA), Rank-in-Class

TABLE 2

DISTRIBUTION OF STUDY SAMPLE AND TOTAL ALBERTA FRESHMAN CLASS, AS OF DECEMBER 1, 1966, BY SEX AND LOCATION OF HIGH SCHOOL

		LOCATION OF HIGH SCHOOL								
		URBAN			RURAL			TOTAL		
POPULATION	SEX	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Study Sample	N.	95	55	150	39	43	82	134	98	232
	% of Total	40.9	23.7	64.6	16.8	18.6	35.4	-	-	-
	% by Sub Group	63.3	36.7	-	47.6	52.4	-	57.7	42.3	-
Freshman Class	N	571	372	943	142	125	267	713	497	1210
	% of total	47.2	30.8	78.0	11.7	10.3	22.0	-	-	-
	% of Sub Population	60.6	39.4	-	53.2	46.8	-	59.0	41.0	-

TABLE 3

PERCENTAGE OF TOTAL SAMPLE MAKING FORMAL APPLICATION FOR ADMISSION WHO WOULD BE ELIGIBLE FOR ADMISSION AT VARIOUS CUTTING SCORES ON FOUR RATINGS, PERCENTAGE OF GROUP SUCCESSFUL, EFFICIENCY AND VALIDITY INDICES FOR EACH CUTTING SCORES.

RATING USED	DEPARTMENTAL FIRST-TRY AVERAGE				PRINCIPAL'S RATING AVERAGE			
	Eligible	Admitted	Efficiency	Validity	Eligible	Admitted	Efficiency	Validity
Admit at 75.0	18.87	100.00	.1887	.19	16.39	100.00	.1639	.18
70	34.28	100.00	.3428	.29	33.11	100.00	.3311	.29
65	58.81	98.93	.5818	.44	56.19	97.62	.5485	.38
60	88.05	97.86	.8616	.83	86.62	91.51	.7926	.34
55	94.03	92.64	.8711	.57	95.99	89.20	.8562	.30
50	97.80	89.71	.8774	.36	99.67	87.58	.8729	.12
N.	318	279	.8774		299	261	.8729	

RATING USED	RANK-IN-CLASS				ESTIMATE OF UNIVERSITY SUCCESS			
Admit at 5*	32.07	97.85	.3138	.23	14.78	100.00	.1478	.16
4	54.48	96.84	.5276	.34	39.18	95.61	.3746	.23
3	84.83	92.68	.7862	.37	74.91	92.66	.6942	.30
2	94.83	89.45	.8483	.25	94.85	90.22	.8557	.34
N.	290	254	.8759		291	255	.8763	

*Legend for Scale Notations. A.Rank in class 1.Bottom 1/5; 2. 3.Middle 1/5; 4. 5.Top 1/5
B.Estimate of university success.1.Poor; 2.Fair;3.Good; 4.Very Good;5.Excellent.

(RIC), and Estimate of University Success (EUS), are reported as are the percentage of this group above the given cutting score who would be admitted. From the point of view of the admissions officer, the important figure is the percentage of "successful" students of the eligible group actually admitted at a given cutting score. For the purposes of this study this proportion of "successful" students of the total eligible sample will be called the Efficiency Index of a given cutting score. For example, from Table 3, of all students applying for admission under the DEA rating, a cutting score of 60.0 has an efficiency of .86. It is interesting to note that with no DEA cutting score 88 percent of the sample were admitted. This means 1.6% (87.74-86.16) of the sample who received DEA's of less than 60, i.e., 5 cases, through re-reads, supplementals or attendance at summer high schools, were able to up-grade their Departmental averages to gain admission. It should also be noted that under these same circumstances that six students were found whose DEA's while above 60.0, were not admitted to the University. Their admission was denied primarily because they lacked necessary Grade XII prerequisite courses for admission to the Faculty or School of their choice. The Efficiency Index will be used throughout the remainder of this paper with "success" being defined in terms of the analysis, e.g., successful admission, successful completion of the first year of the programme, and so on. Further, because the DEA most closely approximates the present admission practice, it will be used as the criterion against which the three principals' ratings, PRA, RIC and EUS, will be evaluated.

The validity coefficients reported in Table 3, *et seq.*, are phi coefficients based on a two by two table using the eligible/not eligible versus successful/not successful dimensions for a given cutting score. For the primary purposes of this study, the value of each coefficient is significant only in its relationship to the other coefficients for the cutting scores of the same rating. The absolute value of this validity coefficient was used to determine the Optimum Cutting Score (O.C.S.) in the range of cutting scores. This manual procedure to maximize validity coefficients lacks the sophistication of the computerized method outlined by Hunka, Cameron and Gilbert (1966). Further, no attempt was made to "cost" the admission of false negatives and positives for the purposes of this paper. However, in comment, with the University facing lagging building schedules and mounting enrollments, the costing of admission decision error cannot long be ignored. Finally, unlike the Hunka approach, no attempt is made to extrapolate intermediate values within the five point intervals of the DEA and PRA's, other than that to be noted later for the RIC. Table 3 illustrates the characteristic pattern of the distribution of validity coefficients for a given range of cutting scores, low at the tails and peaking in the middle ranges. The Optimum Cutting

Score is defined as the lower limit true score of the interval having the largest validity coefficient. For example, the O.C.S.'s in Table 3 are 60.0 for the DEA; 65.0 for the PRA; 3 or the Middle Fifth of the graduating class for RIC; and 2 or a Fair chance of success at the University for EUS.

Another cutting score will be used in subsequent analyses, Equivalent Efficiency Cutting Score (E.E.C.S.). The E.E.C.S. is that cutting score in any one of the three principal's ratings for which the Efficiency Index is equivalent to that for the O.C.S. of the DEA. For example, in Table 3, the efficiency of the DEA O.C.S. of 60.0 is .86. The E.E.C.S. for PRA is 55.0 (.86); RIC, 2 (.85); and EUS, 2 or Fair (.86). The distinction between the O.C.S. and the E.E.C.S., then, is that the former represents the most valid cutting score, while the latter represents the cutting score which has the same efficiency as the most valid criterion rating in determining the likelihood of "success."

Table 4 summarizes the O.C.S. and E.E.C.S.'s for the various subsamples at the admission decision level for all four ratings. This summary includes the data presented in Table 3. Several observations can be made from this Table. The most valid PRA cutting scores, i.e., PRA, O.C.S.'s, are 65 with the exception of Total Rural which is 60, yet the PRA E.E.C.S.'s are 55. This reflects two features of PRA's. First, the PRA's for the study sample displayed a greater variability than the DEA's. Second, it reflects the known characteristic of Alberta Principal's Ratings to be underestimated of about 5 marks of a student's subsequent performance on the Departmental Examinations (Knowles and Black, 1965b, p. 130). The same trend to underestimation appears in the RIC and EUS ratings. It is interesting to find this tendency confirmed inasmuch as the ratings were requested in a format different from that provided by the Department. It is not denied, however, that for the study data, there would be a high correlation between the Principal's Ratings asked for on the CPR and those provided to the Department.

Considering only the DEA efficiencies, and recognizing the limitations in sampling noted earlier, Urban indices are consistently higher than those for Rural samples although these differences are not statistically significant. The earlier research findings that female success prediction is higher than that for males seems to be confirmed by the admission efficiencies but the differences, while consistent in the hypothesized direction, are clearly not statistically significant. The pattern holds true for the three principals' ratings although the earlier finding that PRA's are better predictors for Rural Males, was not confirmed in this study, possibly due to the peculiarities of the Rural Male sample as noted earlier. Similar differences reported earlier for the DEA being a better prediction for Rural females and Urban Total, are not borne out by the data, at least at the admission level.

TABLE 4

OPTIMAL AND EQUIVALENT EFFICIENCY CUTTING SCORES AND THEIR RESPECTIVE EFFICIENCIES COMPARED TO OPTIMAL DEPARTMENTAL FIRST TRY AVERAGE CUTTING SCORES FOR THREE OTHER BASIS OF ADMISSION.

SAMPLE / RATING USED		DEPARTMENTAL FIPST TRY AVERAGE	PRINCIPAL'S RATING AVERAGE	RANK -IN- CLASS	ESTIMATE OF UNIVERSITY SUCCESS
Urban	Male O.C.S.*	60**	65	3	3
	Eff.	.87	.54	.72	.67
	E.E.C.S.*		55	2	2
	Eff.		.80	.83	.86
	Female O.C.S.	60	65	2	2
	Eff.	.92	.68	.93	.93
	E.E.C.S.		55	2	2
	Eff.		.92	.93	.93
	Total O.C.S.	60	65	3	3
	Eff.	.89	.59	.76	.72
	E.E.C.S.		55	2	2
	Eff.		.89	.86	.88
Rural	Male O.C.S.	60	65	4	3
	Eff.	.81	.50	.50	.66
	E.E.C.S.		50	3	2
	Eff.		.80	.81	.81
	Female O.C.S.	60	65	3	2
	Eff.	.83	.48	.82	.84
	E.E.C.S.		55	3	2
	Eff.		.83	.82	.84
	Total O.C.S.	60	60	3	2
	Eff.	.82	.77	.82	.83
	E.E.C.S.		50	3	2
	Eff.		.83	.82	.83
Total	Male O.C.S.	60	65	3	3
	Eff.	.85	.53	.75	.66
	E.E.C.S.		55	2	2
	Eff.		.84	.82	.84
	Female O.C.S.	60	65	3	2
	Eff.	.87	.58	.82	.88
	E.E.C.S.		55	2	2
	Eff.		.87	.88	.88
	Total O.C.S.	60	65	3	2
	Eff.	.86	.55	.79	.86
	E.E.C.S.		55	2	2
	Eff.		.86	.85	.86

* O.C.S. Optimal Cutting Score; E.E.C.S. Equivalent Efficiency Score.

** Admit at 60.0. et. seq.

TABLE 6

DISTRIBUTION OF DEPARTMENTAL FIRST-TRY AVERAGES AND THREE PRINCIPAL'S RATINGS FOR TOTAL SAMPLE AT VARIOUS DECISION POINTS FROM SUBMISSION OF CONFIDENTIAL PRINCIPAL'S RATING TO END OF FRESHMAN YEAR.

	CPR FORM SUBMITTED		ADMISSION APPLICATION SUBMITTED		ADMITTED TO UNIVERSITY		REGISTERED IN FIRST YEAR		WITHDREW AFTER REGISTERING		PASSED FRESHMAN YEAR		FAILED FRESHMAN YEAR	
AVERAGE	DEA	PRA	DEA	PRA	DEA	PRA	DEA	PRA	DEA	PRA	DEA	PRA	DEA	PRA
75 and above	60	49	60	49	60	49	53	45	3	3	50	42	–	0
70 – 74	51	53	49	50	49	50	43	43	–	1	41	39	2	3
65 – 69	82	73	78	69	76	65	66	54	6	6	48	42	12	6
60 – 64	99	97	93	92	89	73	69	61	8	6	42	40	19	15
55 – 59	22	27	19	27	3	19	1	15	–	1	1	10	–	4
50 – 54	15	17	12	11	2	5	–	3	–	–	–	1	–	2
Below 50	7	1	7	1	–	–	–	–	–	–	–	–	–	–
N	336	317	318	299	279	261	232	221	17	17	182	174	33	30
RATING	RIC	EUS	RIC	EUS	RIC	EUS	RIC	EUS	RIC	EUS	RIC	EUS	RIC	EUS
5	94	43	93	43	91	43	81	40	5	2	72	38	4	0
4	70	75	65	68	62	66	47	52	4	2	35	47	8	3
3	92	111	88	107	75	93	61	78	7	7	44	55	10	16
2	33	61	29	58	18	47	13	36	–	5	10	22	3	9
1	18	18	15	15	8	6	7	4	–	–	2	1	5	3
N	307	308	290	291	254	255	209	210	16	16	163	163	30	31

TABLE 7

PHI COEFFICIENTS FOR TOTAL SAMPLE EXPRESSING INTEREST IN ATTENDING UNIVERSITY (N=336) FOR DEPARTMENTAL FIRST TRY AND PRINCIPAL'S RATING AVERAGES FOR A FIXED CUTTING SCORE AT THREE DECISION POINTS.

		URBAN			RURAL			TOTAL		
Decision Point	Cutting Score	Male	Female	Total	Male	Female	Total	Male	Female	Total
Admission	DEA. 60	.68	.75	.69	.84	.74	.72	.72	.75	.73
	PRA. 60	.34	.17	.30	.56	.22	.27	.39	.19	.32
Registration	DEA. 60	.58	.63	.60	.54	.44	.47	.57	.52	.55
	PRA. 60	.33	.06	.26	.42	.23	.30	.35	.14	.27
Freshman Success	DEA. 60	.41	.49	.43	.34	.42	.39	.40	.46	.43
	PRA. 60	.36	-.02	.26	.23	.21	.21	.32	.09	.24

It may be observed that while validity coefficients are one matter, the efficiency indices are something else. It is apparent that the "failure" rates, i.e., non-acceptable rates, are low at any given decision point. Since the progression from the initial contact with the University to the end of the first year is a matter of successive hurdles, only a small percentage of the applicants are denied movement to the next decision point: for example, of 336 interested in attending the University, 18 or 5% did not apply; of 318 applying, 39 or 12% are not admitted; of 279 admitted, 47 or 17% did not register; of 232 registering, 17 or 7% withdraw; and finally of 215 attending, 33 or 15% fail. As noted earlier, this matter of successive cutting makes the sample increasingly homogeneous at each decision point. The admissions officer, then, is not basically concerned with validity indices *per se* but rather with the efficiency of his cutting score at a given point. Moreover, it has long been established that the reliability of any rating is best at the extremes and, in the matter of academic success, the prediction of outright failure in particular. The evidence of this study has shown that the efficiency of the PRA is just as good as that for the DEA. The comparable validity coefficients do suggest however, that the principal's ratings may be measuring in a small degree some factors other than those assessed by the DEA's. However, as the number of students involved is minimal, any unfairness to a particular student who would be admitted under one criterion but excluded by another, can be overcome by multi-channel entry to the University. It could be construed that by use of both DEA and PRA, that the doors of the University would be opened wide to masses of unqualified students. This would be true were it not for the general high correlation between different ratings of the poor student regardless of the evaluation format.

Conclusions

On the basis of this study's sample which is admittedly not representative of the total Alberta freshman intake to the University, it seems evident that the Principal's Rating Average, with its tendency to underestimate, does function with the same degree of efficiency for admission purposes as the Departmental averages with the possible exception of Rural Males. Even here, the difference would appear to be operationally insignificant in the face of current practice. The principals' Estimate of University Success is an acceptable rating but one which would probably find its greatest use as supplemental to the PRA's in case of conflicting data.

The question of differential cutting scores based on sex and location of the high school must be considered unanswered by this study although such differences are sugegsted. The evidence from the study would suggest no major operational difficulties from use of a uniform cutting

score. This would continue to mitigate against Rural students but in no different a fashion than that which currently exists using the Departmentals. It is evident from the distributions of the ratings for the various sub-groups (like those for the Total sample in Table 6) but not reported in this paper, that modestly changing the cutting scores for admission upward for the Rural sample, in particular, will do little to change the efficiency indices. It is concluded that the differences that exist between rural and urban high schools must be attributed to factors other than those assessed by the ratings used in this study. This would also be suggested by the high failure rate of Rural Males in Engineering, and by the success of Rural Females once registered as noted in Table 1. Further, from working the data which was collated by schools in preparation for data processing, the investigator gained the impression that some schools, both rural and urban, did a much better job in preparing their students for university work than did others. It would seem that with a larger sample than that used in this study, an investigation of principals' ratings against a criterion of success at the University by a specific feeder high school would provide more useful information to the admissions officer beyond that provided by a single global cutting score or breakdowns into large group classifications, such as, Rural and Urban.

It would appear, then, from the findings of this study that the PRA can effectively replace the Departmental average for admission purposes. Just what the efficiency might be expected for three cutting scores for the four measures based on this study's sample is reported in Table 8. Considering only the Principal's Rating Average, a cutting score of 55.0 has an equivalent efficiency to a first-try Departmental average of 60.0.

Discussion

If the concept of a multi-channel entry to the University under the existing examination structure is acceptable policy basis, the findings from this study within the present admission practices of the University would suggest investigation of the following routes for admission under operational conditions:

Route 1. Admit on basis of Principal's Ratings average of 60.0 or better including prerequisite Grade XII courses with no individual rating below 50.

Route 2. For students not necessarily meeting the requirements of Route 1 and for out-of-province students, admit on the basis of Principal's Rating average and or supplementary approval standardized test scores in designated areas to ensure at a minimum either acceptable principal's ratings or standardiized test scores in prerequisite areas.

TABLE 8

SUMMARY OF EFFICIENCY INDICES FOR VARIOUS CUTTING SCORES OF FOUR RATINGS FOR ADMISSION TO UNIVERSITY BASED ON THOSE STUDENTS FORMALLY SEEKING ADMISSION WHO WERE ACTUALLY ADMITTED.

BASIS OF ADMISSION		DEPARTMENTAL FIRST TRY AVERAGE				PRINCIPAL'S RATING AVERAGE			RANK-IN-CLASS			ESTIMATE OF UNIVERSITY SUCCESS		
Cutting	Score*	None**	55*	60	65	55	60	65	2	3	4	Fair	Good	V.G.
Urban	Male	.89	.88	.87	.60	.88	.79	.54	.83	.72	.49	.86	.67	.37
	Female	.94	.94	.92	.75	.92	.84	.68	.93	.85	.52	.93	.81	.52
	Total	.90	.90	.89	.65	.89	.81	.59	.86	.76	.50	.89	.72	.42
Rural	Male	.81	.81	.81	.47	.78	.75	.50	.81	.81	.50	.81	.67	.22
	Female	.86	.84	.83	.47	.83	.78	.48	.85	.82	.63	.84	.68	.38
	Total	.84	.83	.82	.47	.80	.77	.49	.83	.82	.57	.83	.67	.31
Total	Male	.86	.85	.85	.56	.84	.78	.53	.82	.75	.49	.84	.66	.33
	Female	.90	.89	.87	.61	.87	.81	.58	.88	.83	.58	.88	.74	.44
	Total	.88	.87	.86	.58	.86	.79	.55	.85	.79	.53	.86	.69	.37

* Admit with this cutting score, i.e., 55.0.

** Based on Departmental first try averages; see text.

(This is similar to the present University Early Admission Programme and to documentation currently asked of out-of-province students).

Route 3. Admission under the present "normal" route using Departmental examinations and supplemental scores to meet number of passed courses and average requirements.

Any Alberta student, under this plan, would have the option of meeting admission under any one of the above three routes. It is interesting to note that data from Route 2 students in an operational setting has been collected already by the Registrar's Office and is presently being analyzed by Dr. W. D. Dannenmaier, Assistant Registrar. Presumably, a report will be available shortly. This particular study involves the use of the College Entrance Examination Board's Scholastic Aptitude and Achievement tests in areas designated by the Faculty or School. The University of Alberta is similarly examining the use of the Canadian Service for Admission to College and University tests.

There remain two areas of admission concern, for which data are currently available and which should be reported in the literature, or for which investigations should be undertaken to provide information at the earliest possible date. The first is the Non-Matriculated Adult (NMA) programme which has been in operation for some time at the University. It is known that two such studies are either under way or about to begin as graduate theses. The second area would involve students not eligible to qualify for admission under the NMA programme and who are also lacking the conventional course prerequisites under any one of the three above routes. A study of 100 such students who were deemed to be meritorious by the Calgary high school counsellors was proposed for the Fall of 1969. For reasons unknown to the author, this experimental admission study failed to gain the support of the University administration. It is sincerely hoped that this study proposal will be reconsidered at a later date, particularly in light of the high success indices of students who received top principals' predictions of success at University found in this study.

Concluding Remarks

If the admissions process is to be meaningful, it must be supported by a continuous evaluation of its format and procedures. It is argued that this is an integral part of university institutional research undertakings. Yet for all its obvious advantages to meaningfully influence administrative decisions in a wide variety of areas, admissions research often fails to be recognized within this context. The particular study reported in this paper with all its acknowledged limitations has shown, nonetheless, that by use of principals' ratings, the admissions process could be pushed back in time to such a degree to have meaningful signif-

icance for University, high school and student planning with no apparent loss in efficiency over present admission practices.

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Footnote

[1] The lack of returns indicated here is disappointing in view of the co-operation received in earlier studies.

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It was hypothesized that a Departmental Examination System of Education would tend to favour students with a high degree of dogmatism: that more such students would enter university and that dogmatic attitudes would have a positive relationship with success in higher education. The findings partially confirmed the hypotheses when the data were analyzed separately for University Faculties.

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Dogmatism and University Success

Critics of the Departmental Examination System as it is practised in Alberta have frequently argued that it rewards students who uncritically accept the ideas or the point of view presented in class. The student's system of beliefs permits the acceptance or rejection of concepts to be determined by the rank or the authority of the person presenting the concepts. It is also felt that the use of common textbooks in each subject throughout the province causes the writers of the Departmental Examinations to bias the examinations, quite unconsciously, in terms of the theories and assumptions of the textbook used. Subsequently, successful students learn by rote. This mitigates against the truly creative student who has sought and found textbook errors or questioned particular textbook assumptions. Similarly it is felt that the unity of thought thus achieved by successful graduates of the system leads to unconscious biasing of the thought and teaching in the Universities.

The authors have generally accepted the logic followed above. They have concluded that, if this is true, Alberta students who are successful in achieving satisfactory scores in Departmental Examinations should exhibit a higher degree of acceptance of authority than students from

other types of systems. Similarly, they concluded that students having a high degree of such acceptance should be more successful at University.

All of the above is premised on the assumption that people differ in their approach to authority. Fromm, (1947) differentiated between rational and irrational authority, suggesting that rational authority assumes a general equality between people with exceptions being made in terms of particular competencies and that irrational authority assumes a general inequality between people with superiority resting upon power over people. Rokeach, accepting Fromm's differentiation, has carried it a step further, postulating that these approaches to authority consist of belief systems and lead to the acceptance and rejection of both ideas and people (Rokeach, 1960, p. 60). Thus his open and closed belief systems conform closely to Fromm's concept of rational and irrational authority. A person with an open system would tend to organize his behaviours in accord with his own best interests, questioning authority and resisting externally imposed reinforcements, whether rewards or punishments. A person with a closed system would rely on authority and structure his behaviour in accord with the reinforcements issued by authority. The Dogmatism Scale (D-Scale) was developed to measure the extent of open or closed systems.

In applying the above to our conceptualization of the Alberta Schools, as a representative of Departmental Examination Systems, we reasoned that persons with open systems would more frequently violate the carefully defined programme leading to Departmentals, consequently fewer would enter University. Conversely, enrolled students would tend to be dogmatic. Similar reasoning led to the conclusion that students with closed systems, because of their tendency to structure their behaviour in terms of the reinforcements of authority, would receive higher scores on the Departmental Examinations than would students with open systems. The continuation of this system into the University would result in students with closed systems receiving a higher Grade Point Average (GPA) at University than students with open systems.

This reasoning led to the following hypotheses:

(*a*) University students from Alberta would receive higher scores on the D-Scale than students not originating from Departmental Examination Systems.

(*b*) A positive correlation would exist between the D-Scale and the Grade 12 Departmental Examination Average.

(*c*) There would be no significant relationship between the D-Scale and a score on a "neutral" test of academic aptitude and achievement.

(*d*) A positive correlation would exist between the D-Scale and the University GPA.

These hypotheses differ from the results obtained by Linton (1968) in a study of dogmatism and academic achievement. It must be noted that Linton used the 9th Grade Departmental Examinations as a measure of achievement and found high achievers to be significantly lower in Dogmatism than low achievers. The premise of this study, however, is that, at the high school and University level, the Departmental system leads to an artificial situation which rewards dogmatic students.

Method

In the fall of 1968, The University of Calgary admitted 194 students who had taken both the Departmental Examinations and the College Entrance Examination Boards (CEEB). Each member of this group was telephoned and invited to take the D-Scale. The invitation was worded about as follows:

> "Hello, this is Mary Jo Major speaking, calling from the University. We are doing a study on the relationship between the College Entrance Examination Boards and the Departmentals and how these relate to success in University. Could you come in and take a quiz?"

On the first round of telephone calls there were 81 respondents. Time prevented a second telephoning of those whom we had been unable to reach, or who had neglected to come, following the first call.

Students were tested at a time suitable to them and on an individual basis. The test was administered without further explanation, except for the usual qualifications that confidence would be preserved, that the test results would have no direct bearing on their work at the University, and that we would discuss the test and its purpose after they had taken it if they wished to do so. Only one student objected to this but agreed to participate after he was informed that if he took the test he could hold it until the explanation had been given, that if he found the explanation unsatisfactory he could destroy the test.

Following administration the D-Scale was scored on the 40 items used in the final analysis of the test by Rokeach. A correlational matrix was computed for the sample as a whole; and then for the separate faculties.

Results

The hypothesis that Alberta students would receive a higher average score on the D-Scale than a sample from an area using a different system was not proven. The sample from the University (N=81) had a Mean of 142.1, a Standard Deviation of 23.95. Rokeach (1960, p. 90) reports that samples at Ohio State University had Means ranging from 141.3 to 143.8, Standard Deviations ranged from 22.1 to 28.2. Obviously there was no difference.

Table 1 gives the Means, Standard Deviations and Intercorrelations for the predictor and the criterion variables for the total Dogmatism sample. When viewing the University population as a whole only hypothesis 3, that there would be no relationship between the D-Scale and a neutral test of academic aptitude, the CEEB, is supported. A positive correlation does exist between Dogmatism and Departmental Average, but since a correlation coefficient of .21 is required for significance at the .05 level (two-tailed test) with this size sample it is regarded as failing to support hypothesis 2.

TABLE 1

MEANS, STANDARD DEVIATIONS AND CORRELATIONS BETWEEN THE PREDICTOR VARIABLES AND THE GRADE POINT AVERAGE (N=81)

	Departmental Average	C.E.E.B. Average[a]	University Grade Point Average	Mean	S.D.
Dogmatism	.076	.002	-.027	142.11	23.95
Departmental Average		.894*	.888*	72.96	9.36
C.E.E.B. Average			.408*	579.77	58.71
University Grade Point Average				2.17	.82

[a] Computed on S.A.T. and three Achievement tests.

* Significant at .05 level of confidence.

Following the first analysis of data, reported in Table 1, a second analysis was made in which the relationship between the D-Scale and Departmental Average and GPA was computed according to Faculty. The effects of Scholastic Aptitude and past achievement, as represented in the CEEB, were statistically controlled by the use of standard procedures for determining a partial correlation coefficient. Students from the Faculty of Arts and Science were divided into those majoring in the Arts area and those majoring in the Natural Sciences. It was not possible to determine the significances of these relationships as procedures for determining the significance of a partial-correlation have not yet been established, consequently the results can only be viewed as trends. There appears, however, a very definite tendency for grades

in the pure and applied sciences, as well as in Arts, to vary directly with the D-Scale. In Education and in Business an inverse relationship appears between the D-Scale and the GPA. These relationships, together with the Means and Standard Deviations of scores on the D-Scale, by Faculty, are reported in Table 2.

TABLE 2

MEANS AND STANDARD DEVIATIONS OF THE DOGMATISM SCALE AND THE CORRELATIONS BETWEEN DOGMATISM AND THE CRITERION VARIABLES (DEPARTMENTAL AVERAGE AND UNIVERSITY GRADE POINT AVERAGE) ACCORDING TO FACULTY

	Arts N=18	Science N=32	Business N=9	Education N=17	Engineering N=5
Departmental Average	.170	.169	.455	-.692	.162
University Grade Point Av.	.101	.270	-.184	-.362	.244
Mean	140	143.19	152.66	134.82	148.60
S.D.	20.96	25.50	17.21	22.51	82.77

Note.- The samples have been controlled for academic aptitude statistically by partialling out the College Entrance Examination Board Average.

Summary

This study was undertaken in order to explore one aspect of the complex interaction between the Departmental Examinations and academic success. It was hypothesized that the general effect of Departmental Examinations would be to increase the authoritarian atmosphere in the schools and to reward those who were, in turn, dogmatic.

A first step was to administer the Dogmatism Scale to a sample of successful students, i.e. students who had achieved University, and compare their scores with those from another area. It was found that Al-

berta students did not differ from samples taken at Ohio State University (Rokeach, 1955). The Alberta sample is not defended as a typical sample: it is admittedly biased. It was composed of students who had successfully completed high school, voluntarily taken in CEEBs and voluntarily taken the D-Scale. The result of this bias, however, should have been to produce a sample higher in dogmatism than that of the total group, not lower. Consequently, it is with some assurance that the authors state that no difference exists between Alberta students and the samples reported by Rokeach on the Dogmatism Scale.

When the University population was viewed as a whole (Table 1), Dogmatism appeared unrelated to either the GPA, or to the usual predictors of University success. The only correlations that achieved significance were between the CEEB and the Departmental Average and those between these predictors and GPA. The failure of the initial hypotheses to be verified resulted in the investigators taking a further step. The relationships were re-computed according to Faculty, with the effects of aptitude and past achievement controlled statistically through the use of a partial correlation coefficient. In this analysis trends appeared which had been obscured by the heterogeneous nature of the total sample. In Arts, Science, and Applied Science positive relationships occurred between Dogmatism and both the Departmental Examination results and the GPA. This trend was most pronounced in Science, but also existed in Arts and in Engineering. In those Faculties in which social relationships were a major, if underlying, factor of interest to the Faculty goals, a negative relationship existed between Dogmatism and GPA. It is also interesting that in Education, where the entrance requirements reflect the open nature of the Faculty and frequently include person-oriented courses such as Social Studies, a negative relationship existed between Dogmatism and GPA. In Business, where the entrance requirements are essentially the same as those of Science, a positive relationship exists between Dogmatism and the Departmental Average.

Conclusions

The major hypotheses of this study were not proven. In fact, the results do not encourage their continued study in their present form. However, the ex post facto investigation of relationships between Dogmatism and success by Faculty led to results which require further study.

A confounding factor was that Arts students take Science courses, Science students take Arts courses, and students in professional schools take either (or both) Arts and Science Courses. Consequently the hypotheses proposed for further investigation are:

1. In Science *courses* a positive, significant, relationship wil lexist between GPA and Dogmatism.

2. In Arts *courses* no relationship will be found between GPA and Dogmatism.
3. In professional *courses* which relate to people a significant negative relationship will exist between GPA and Dogmatism.
4. In professional *courses* which do not relate to people no relationship will be found between GPA and Dogmatism.

Such a study could bear both theoretical and practical meaning, particularly in a day of student unrest and when so many University administrators are entering administration from Faculties of Science.

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The Myers-Briggs Type Indicator (MBTI) was administered to 365 female prospective teachers, of whom 65 sought certification as elementary school teachers and 300 as secondary school teachers. Elementary school teacher candidates were found to be significantly more extroverted than secondary school applicants. The groups did not differ however on the measure of introversion. Significant differences were also found on the MBTI measures of the judging/perceiving dimension.

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A Note on Differentiating Prospective Elementary and Secondary School Teachers

The hypothesis that prospective elementary school teachers differ significantly from secondary school teachers on measures of extroversion and introversion was tested in an investigation the results of which were reported in this journal in 1966. The hypothesis was not supported although there were the usual reasons for believing that with a larger N, the differences in means on the extroversion and introversion scores might have reached statistical significance. Sample sizes in the Brown, Fuller, and Richek (1966) study were 71 elementary school and 78 secondary school teacher aspirants. All Ss were females.

The opportunity for further investigation of the hypothesis presented itself recently with the completion of the statistical analyses of the Myers-Briggs Type Indication (1962) (MBTI) scores on a much larger sample (especially in the secondary school category) of teacher candidates. The purpose of this brief note is to report the findings of the more recent study.

Method

Teacher candidates (university juniors or seniors and a small number of graduate students) completed the MBTI shortly after applying for admission to A College of Education programs leading to teacher certification. In all, completed MBTI protocols were obtained on 65 female elementary school candidates and 300 female secondary school candidates. (There were 70 male teacher candidates but the data on this group will not be reported here.)

The primary hypotheses tested in this study are again: (*a*) that elementary school teaching aspirants are more extroverted and (*b*) less introverted than their secondary school counterparts. Hypotheses *vis à vis* the other MBTI scores were not formulated in the light of the results of the earlier investigation. However, because these data were presented in the earlier report, it has been decided to table them also in this paper.

Means and standard deviations were obtained, utilizing the University of Oklahoma's IBM 360/40. To test significance of differences between group means, the t test for the means of independent samples as described by Gourevitch (1965) was used.

MBTI Scores

Webb (1964) in an analysis of the scoring system for the MBTI points out that at least one raw score of each index (e.g., Extroversion or Introversion) is as reliable as the difference score (e.g., Extroversion raw score minus Introversion raw score or vice versa). Additionally, the raw and difference scores correlate highly. Difference scores, in turn, are used to obtain preference scores and continuous scores in the manner described by Myers (1962, pp. 8-10). This report utilizes the raw scores for each index and also the continuous scores which are the preference scores *plus 100* for *Introversion, Initiation, Feeling,* and *Perceiving,* and *100 minus* the preference scores for *Extroversion, Sensation, Thinking,* and *Judging.*

Results and Discussion

Extroversion and Introversion

It will be noted from Table 1 that the data from the larger sample of this study (in contrast with the first study) support of the primary hypothesis as it pertains to extroversion: prospective elementary school teachers are significantly more extroverted than are secondary school teachers. The difference in the group means of the extroversion index raw score is significant at the $p < .01$ level.

It cannot be concluded, however, that prospective secondary school teachers, although less extroverted, are significantly more introverted than are elementary school teachers. Examination of the means of the

TABLE 1

MEANS AND STANDARD DEVIATIONS ON MBTI SCORES FOR

65 PROSPECTIVE ELEMENTARY AND 300 SECONDARY SCHOOL TEACHERS

Index Scores	Elementary (N=65) M	SD	Secondary (N=300) M	SD	t
Extroversion	17.48	6.32	14.97	6.48	2.92**
Sensing	13.40	7.16	13.24	7.69	NS
Thinking	8.39	5.74	7.49	4.95	NS
Judging	18.08	6.16	16.15	6.36	2.30*
Introversion	3.65	6.17	3.09	6.21	NS
Intuition	10.11	5.54	10.86	6.28	NS
Feeling	12.06	5.33	12.65	4.81	NS
Perceiving	8.52	5.91	10.48	6,35	2.39*
Continuous Scores					
Extroversion/Introversion	83.86	25.35	93.57	25.99	2.79**
Sensing/Intuition	94.42	24.52	96.25	26.96	NS
Thinking/Feeling	108.35	25.90	111.31	18.72	NS
Judging/Perceiving	81.81	23.90	89.66	24.95	2.38*

* $p < .05$
** $p < .01$

Extroversion/Introversion continuous scores reveals that both groups are extroverted—note that the E/I means are less than 100 in both instances. However, there is no significant difference between the groups on the Introversion index raw scores. The difference between the groups on the E/I continuous scores is also significant at the $p < .01$ level.

The fact that both elementary and secondary school teachers are extrovertive warrants a brief comment. The finding would seem to resonate with the observation that teaching at both elementary and secondary levels is an extrovertive profession (although, as Ausubel (1965) has pointed out, it does not necessarily follow that introvertive teachers make less effective teachers than do extroverts). The data of

the present study do indicate, however, that elementary teaching seems to attract more highly extroverted personalities than does secondary school teaching.

The implications of this finding for the selection of students for teacher preparation programs are discussed elsewhere (Brown and Richek, In Press) and will not be repeated here.

Other MBTI Scores

Examination of Table 1 also indicates that aside from the Extroversion and Extroversion/Introversion scores, on only the judging/perceiving dimension do the two groups differ significantly. On all three measures of judging/perceiving—the continuous score and the raw scores of the two indices—the differences are significant at $p < .05$. Both groups are "judging" types (note that the means for the two groups are less than 100) but the elementary school Ss are significantly more "judging" and less "perceiving" than are the secondary school Ss. In the earlier investigation, the two groups were also more "judging" than "perceiving," but the differences between the groups were not significant.

An explanation of this particular finding is not readily apparent. Elementary school teachers have been reported to prefer "judging" to "perceiving" (as have school principals and school superintendents) in dealing with the environment (Myers, 1962), but as far as is known there have been no other comparisons of elementary and secondary school teachers on this dimension. The judging/perceiving preference is said to be related to a number of cognitive as well as non-cognitive variables, e.g., occupational interests, values, needs, verbal aptitude, quantitative aptitude, etc. Any attempt to explain the psychological meaning of the significant difference on the judging/perceiving preference between the two groups based on the data of this study would be speculative. The finding, however, does seem to warrant further investigation.

Summary and Conclusions

It may be concluded that prospective elementary school teachers are significantly more extroverted than are secondary school teachers when this personality dimension is measured by the MBTI. The groups, however, do not differ on the measure of introversion. Both samples are noted in this study to be more extroverted than they are introverted. On the other MBTI Jungian type scores, only the differences for the judging/perceiving dimension were significant.

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The investigator describes step-by-step procedure used to obtain Pearson product-moment correlation coefficients for the Flexibility of Reading Test.

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The Reliability of the Flexibility of Reading Test

The need for tests of reading flexibility was noted more than a decade and a half ago by Carrillo and Sheldon (1952). Only a relatively few tests of this nature have been published. Among these is the *Flexibility of Reading Test,* developed by Braam and Sheldon.

The development of the *Flexibility of Reading Test* is described by Braam in *The Reading Teacher* (1963). Two of the three forms of this test have been published (Braam & Sheldon, 1959). The third form is available from the Reading and Language Arts Center at Syracuse University.

The Flexibility of Reading Test consists of five selections ranging in length from 750 to 900 words, with each selection representing a different kind of material (narrative, literature, science, history, and psychology). In his description of the development of the test, Braam explains that the narrative passages for the three forms were taken from the same source, with this procedure being followed for the other passages, in order to make the tests comparable in respect to difficulty. "This was the only control established for the level of difficulty of the material, although the grade level of each selection was determined by the Dale-Chall readability formula (Braam, 1963)." Grade levels as determined by the readability formula range from 9-10 for narrative and literature selections to 16 for the psychology selection.

The present investigator obtained Pearson product-moment correlation coefficients for the rate and comprehension aspects of the *Flexibility of Reading Test* during the second semester of the 1965-66 school year. Because only the first two forms of the test have been published, the

investigator used multilith copies of all three forms. The only other change involved the checking of comprehension with an unpublished set of multiple choice questions in place of the true and false questions that are published.

The following steps were taken:

(*a*) The sample was selected from freshman students enrolled in the Improvement of Learning course at Syracuse University.

(*b*) On the second meeting of the semester, Form 1 was administered.

(*c*) On the third meeting of the semester, Form 2 was administered.

(*d*) Six weeks later, Form 3 was administered.

(*e*) Only data from students who had taken all three forms were used.

(*f*) For the rate reliability, scores on the five passages comprising each of the forms were recorded in addition to a total over-all score for each form.

(*g*) For the comprehension reliability, scores on the five passages comprising each of the forms were recorded in addition to a total average score for each form.

(*h*) These data were processed through the Tape Storage and Retrieval (TSAR) program (1964) at the university's computing center.

Table 1 and Table 2 contain the results of the analyses. As indicated, the present investigator obtained an over-all rate reliability of .89 between the first and second forms and .90 between the second and third forms; obtained also were over-all comprehension reliabilities of .66 and .52, respectively, between first-second and second-third forms.

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TABLE 1

PRODUCT-MOMENT CORRELATION COEFFICIENTS FOR RATE ON BRAAM-SHELDON FLEXIBILITY OF READING TEST

		Form I						Form II						Form III					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Narrative		8515	7841	7381	7035	8960	6978	6761	7720	6598	6003	7502	6846	7193	6004	6162	5588	6977
F	Literature			7425	7782	7174	9008	6111	5664	7325	6803	6922	7245	6301	7121	5517	5126	4849	6318
o	Science				8643	8280	9344	8771	8494	8380	7974	6776	8914	7398	8261	7147	7225	7699	8326
r	History					7681	9187	7557	7279	7302	7353	6469	7945	7127	7507	6516	6374	6760	7548
m	Psychology						8830	7848	8082	7638	8079	7170	8582	7214	7699	5952	6108	7487	7652
I	Total							8239	8011	8467	8117	7346	8870	7695	8343	6895	6857	7159	8137
	Narrative								9030	8230	7694	6208	9092	7326	8546	7863	8089	8032	8798
F	Literature									8146	7957	6628	9226	7916	8292	7475	7737	8070	8713
o	Science										8072	6619	9013	7891	8458	7219	7272	7187	8370
r	History											8752	9404	7549	8099	6600	6446	6971	7860
m	Psychology												8500	7088	7288	5653	5052	5954	6824
II	Total													8337	8983	7684	7627	8001	8954
	Narrative														8556	7300	6707	7126	8688
F	Literature															8319	8231	7581	9375
o	Science																8589	8000	9202
r	History																	7831	9153
m	Psychology																		8992
III	Total																		

Decimals have been omitted. N = 70

TABLE 2

PRODUCT-MOMENT CORRELATION COEFFICIENTS FOR COMPREHENSION SCORES ON BRAAM-SHELDON FLEXIBILITY OF READING TEST

		Form I					Form II						Form III					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Narrative		4136	2113	2119	2858	7211	0569	4203	2278	2902	2593	4146	1491	2999	3862	3236	2730	5134
F	Literature			1985	1948	2499	6483	2188	2955	2086	2411	2403	3815	2318	3351	1478	1416	2277	3922
o	Science				2455	1331	5422	2971	4554	1027	0025	3953	3676	1208	2150	3034	2985	2218	4024
r	History					1042	5190	3510	3002	3218	0852	5025	4643	0761	2294	0262	2709	3215	3046
m	Psychology						5615	1434	3371	2209	2364	2581	3844	2703	1746	0728	0748	0803	2394
I	Total							3383	5738	3408	2991	5614	6573	2850	4349	3093	3545	3821	6219
	Narrative								2587	1389	1532	3022	5185	1765	2618	1334	3176	0274	3188
F	Literature									1314	1308	4061	6059	1877	2530	4935	4801	2355	5980
o	Science										5233	2080	6857	1790	3819	-3532	-0414	4001	1666
r	History											2021	6970	1252	2507	-0689	0648	1965	1901
m	Psychology												6193	2038	2746	1427	3294	2933	4254
II	Total													2707	4516	0864	3363	3790	5228
	Narrative														3094	0206	0746	0890	5329
F	Literature															-0945	0288	4839	6054
o	Science																5629	-0046	5660
r	History																	0015	5960
m	Psychology																		5040
III	Total																		

Decimals have been omitted. N = 63

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Four selected dimensions of the promotional aspirations and role perceptions of teachers, vice-principals, and principals were investigated. The implications of the study go well beyond the specific administrative aspects considered in the article.

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Promotional Aspirations and Differential Role Perceptions

Identifying and selecting suitable candidates for appointment to administrative positions in educational organizations is a matter of some importance, for if administration is thought of as a facilitating and stimulating function in the organization, then the quality of administration profoundly affects the quality of teaching and learning in the schools. The quality of administration itself depends in large measure upon the quality of administrators, and therefore, upon the appropriateness of the selection procedures employed. In large, and growing, school systems, those responsible for selecting administrators find themselves increasingly unfamiliar with the personal and professional characteristics of candidates for advancement. Candidates, in turn, may find themselves vying for a limited number of positions with a group of contestants all of whom satisfy the formal requirements. The employment of formal procedures and channels may, therefore, be insufficient in gaining the attention from superiors necessary to get the appointment. Superordinate officers may find the formal procedures equally unsuited for making the selections.

Relatively little is known about the influences and variables which are actually involved in the promotion process. A number of studies in Western Canada have centred on promotion to the principalship. Descriptive surveys, they approached the problem from the basis of

selection procedures and criteria, and found little agreement between practices widely recommended and those actually employed in the school systems. The investigations disclosed a lack of system and consistency in selection and promotion procedures. With limited written policy or standardization of promotion requirements, school personnel who aspire to advancement may need to adopt extraordinary behaviour which will ensure visibility and approval. Ellis (1967), who gathered information on the career patterns and personal characteristics of recent appointees to the principalship, attempted to identify such visibility techniques. He speculated that teaching excellence alone was insufficient to provide the degree of visibility needed to be selected for administrative positions, and hypothesized that interested individuals must gain visibility largely by extra-organizational activities, such as involvement in community affairs. The findings of the study did not support this hypothesis. Principals affirmed the belief that career mobility came through effective job performance, and not through extra-organizational activities. It is by no means clear, however, how those making the promotions become aware of and adequately informed about such performance.

Another line of investigation is suggested in the following statement by Gross (1963).

> Although organizations exist to accomplish organizational objectives, they also serve as the arenas in which individuals pursue their careers and meet many of their personal needs. This sensitizing idea suggests that such factors as level of aspiration, job and career satisfaction, and job commitment are variables that need to be taken into consideration in efforts to understand variable role performance and differences in organizational functioning. Indviiduals who have different levels of aspiration may define their roles quite differently because of their need to achieve visibility [p. 36].

An important researchable problem thus emerges—do promotional aspirations affect role perception? Does the person with strong ambitions for advancement perceive his own role, and the role to which he aspires, differently from the way incumbents of similar positions, who do not aspire to promotion, perceive them?

In any school system, it is likely that there will be a range of promotional aspirations among teaching and administrative personnel. There will be some who are prospective candidates for advancement, and therefore see their current position merely as a step towards higher-level appointments involving greater administrative responsibility. There will also be many for whom the desire to be promoted provides little or no incentive. For example, there are men and women who are career teachers, and do not seek advancement because they find great satisfaction in their classroom relationships with pupils. In addition, there are individuals who view teaching either as a temporary occupation filling the years between high school and a permanent career, or as a

supplementary source of family income. It is also probable that the widespread and still powerful traditional belief that women are unsuitable for administrative positions, inhibits their promotional ambitions. Among those engaged in adminstraton also, there are probably varying levels of promotional aspiration. While some may actively seek further advancement, others may be content to remain in their present positions. They may see their current role as the pinnacle of their careers, and are unwilling to compete further for limited promotional opportunities.

A number of questions arise. Do the groups with high levels of promotional aspiration perceive the role behaviours exhibited by immediate superiors occupying the position to which promotion is desired differently from those groups who do not possess a strong desire for advancement? Do they also have different perceptions of the role behaviour most appropriate for the positions which they themselves presently occupy? Since achieving promotion may depend on pleasing one's superiors who hold the power to grant advancement, different attitudes towards superior authority held by those with strong desires for promotion, and those without such mobility interests.

A Recent Study

To investigate these questions, Tronc (1969) focussed attention upon the three positions of teacher, vice-principal, and principal, on the assumption that these comprise a fairly standard career pattern, with teachers who seek promotion advancing first to the position of vice-principal, and then from the vice-principalship to the position of principal. It is acknowledged that some appointees to administrative ranks may follow a different promotional route, perhaps omitting the vice-principalship, or passing through such positions as counsellor or departmental head, but studies of administrative mobility have indicated that the teacher—vice-principal—principal route is the most common in school systems of Western Canada.

The roles associated with these three positions were studied in terms of the following selected dimensions: the strength of promotional aspirations held; perceptions of the leader behaviour of the immediate superior; perceptions of the leader behaviour deemed appropriate for the position presently occupied; and the level of deference to superior authority.

The Conceptual Framework

The theoretical base on which the investigation rested consisted of five major strands: (*a*) Perception; (*b*) Leader Behaviour Dimensions of Initiating Structure and Consideration; (*c*) Selective Perception and Reward Systems; (*d*) Upward Mobility Orientations and Role Behaviour Emphasis; (*e*) Deference to Superior Authority.

Perception

Ittleson and Cantril (1954) define perception in the following terms:

> Perception is that part of the process of living by which each person, from his own unique personal behavioural centre, creates for himself the world in which he has his life's experiences, and through which he strives to gain his satisfaction [p. 5].

According to this view perception is more than a simple objective reaction to stimuli in the environment. Instead, suggest Ittleson and Cantril, a process of transaction takes place, whereby the perceiver assigns meanings and significance that are not necessarily inherent in the stimulus. The net effect is that each perceiver sets up his own unique world of reality. Within the transaction between perceiver and stimuli, each individual creates his own psychological environment, by attributing certain elements of his experience to the external world, which he believes possesses an independent existence. Thus, persons, objects and events are perceived as external objective realities, possessing inherently the characteristics that have actually been attributed to them by the perceiver. The perceptual process, therefore, is influenced by factors in the perceiver, as well as by factors in the external environment. Krech and Crutchfield (1948, p. 81), have classified these two major determinants of perception as "instructional" factors, which are extra-organismic, and derived solely from the environment; and "functional" factors, which derive primarily from the needs, experiences, and memory of the individuals.

Therefore, each person is limited in what he perceives, and his own experiences and accumulated background of meanings influence the interpretation of what he sees.

Leader Behaviour Dimensions

Conceptualization of the leadership phenomenon has developed from the task-oriented approaches of the "scientific management" philosophy, through the social-emotional "human relations" phase to the current attempts to synthesize the two dimensions. Considerable theoretical formulation and empirical evidence have been presented to support the view that leader behaviour in formal organizations comprises acts that are functionally related either to goal achievement, or to the maintenance and strengthening of the group. As a result, constantly recurring themes in modern organization theory have been the duality of conditions necessary for organizational survival and development, and the parallel related duality of leader behaviours required to accomplish these ends.

This dual dichotomy of objectives and leader behaviours has been widely discussed, giving rise to a wide range of terminology. For example, organizational objectives have been classified by Cartwright and Zander (1960, p. 496), under the headings of goal achievement and group main-

tenance, by Olmsted (1963, p. 112), as locomotion and cohesiveness, and by March and Simon (1958, p. 34), productivity and satisfaction. Probably the best known and most widely employed dichotomization of the leader behaviours related to goal-directed, task-oriented activities on the one hand, and the socio-emotional group maintenance activities on the other, has been Halpin's (1956), division of leader acts into the dimension of Initiating Structure and Consideration.

> Initiating Structure refers to the leader's behaviour in delineating the relationship between himself and members of the group, and in establishing well-defined patterns of organization, channels of communication and ways of getting the job done. Consideration refers to behavior indicative of friendship, mutual trust, respect and warmth in the relationship between the leader and members of the group [p. 1].

Selective Perception and Reward Systems

When an individual enters an organizational position, he is likely to be confronted by a set of vague and perhaps even contradictory expectations for his behaviour. To protect members from undue conflicts and pressures, and to ensure as far as possible the achievement of the organization's goals, a limited number of functionally specific expectations are extracted from the role set, formalized and adopted as official rulings, often in the form of handbooks, policy manuals and job descriptions. These reasonably explicit, officially sanctioned expectations constitute what Abbott (1965, p. 5) calls the "codified behaviour system."

However, the individual brings to his role a personality, which is characterized by need dispositions. In the development of his role concept, his needs serve as a perceptual screen, and a process of selective perception operates, as he views the officially prescribed role expectations. Thus, the role concept which an individual develops, both through formal instructions and incidental learning, is modified by the intrusion of his own needs and values, which have determined the particular expectations emphasized or de-emphasized.

> As a member of a formal organization, then, each individual may be conceived to be functioning in two separate situations, the one imbedded in the other. The first consists of the official definition of the position, the codified behavior system, and the second consists of the individual's own role concept, which represents essentially an expression of those facets of the personality which are relevant to organizational membership. The interaction of these two situations, a perceptual process, represents for each individual a cognitive orientation to roles [Abbott, 1965, p. 5].

In addition to the cognitive role orientation, an individual also develops affective responses. He may behave in accordance with his perception of the way the role has been defined for him, but his enthusiasm is likely to depend on the attitudes and feelings generated by those personal satisfactions which he anticipates, if he behaves in organizationally approved ways. In exchange for individual member contributions to

the organization's operation, incentives and rewards are provided to motivate continued desirable behaviour. An individual who remains in an organization can anticipate organizational rewards for expected performance. Promotion may be one such reward when the individual's role behaviour is in keeping with organizational requirements. Thus, the reward system, according to Abbott, (1965, p. 5) operates as an intervening variable to alter an individual's cognitive orientation to his role. There is a considerable body of evidence suggesting that this modification of the cognitive role orientation which is brought about by rewards involves a shift towards an emphasis upon such "system-oriented" aspects of behaviour as goal achievement, task orientation and the Initiating Structure dimension of leader behaviour.

Upward Mobility Orientations and Role Behaviour Emphasis

Merton (1940, p. 560) has analysed the "carry-over" effect of reward in bureaucracies, where the effect of the reward extends beyond the gratification of the individual's immediate need, and influences his outlook and attitude toward the reward system and the organization as a whole. In bureaucratically structured organizations, such as large school systems, an individual's promotion does not depend solely on the opinion of an immediate superior. Instead, allocation of rewards tends to be under strong organizational control, with the reward system fairly formalized and incorporated into the structure. According to Litterer (1965):

> People in bureaucracies learn quite early what is expected of them. They appreciate that their security and advancement rest heavily on their personal competence, and there is a high certainty to the reward conditions, which increase the intensity of the effect of the system [p. 228].

In an analysis of individual behaviour within large organizations, Presthus (1962, p. 9) suggests that advancement depends on the type of accommodation which the individual makes to the demands of the organization.

> Following interpersonal theory, we assume that men behave according to the perceived expectations of a given social situation. Over a period of time, such responses become relatively consistent; they are continually reinforced because they meet compelling individual needs for security, recognition, and group acceptance . . . such as accommodations are always the result of interaction between the bureaucratic situation and personality [p. 164].

Considerable similarity to Abbott's "cognitive role orientation" is evident in the Presthus conceptualization cited above. Three modal patterns of accommodation are described: upward mobility, indifference, and ambivalence. Of these, the "upward-mobile" is the successful organization member, who desires, seeks and achieves promotion, who enjoys organizational life and reaps the benefits of increased status and salary. Presthus is of the opinion that advancement within a large or-

ganization demands a particular kind of individual perception—both of the organization as a whole, and of the roles within it. The upward-mobile's perceptual framework, as described by Presthus (1962, pp. 167-169), is biased towards the Initiating Structure dimension of leader behaviour. Because organizational goals and task achievement become so strongly internalized, the upward-mobile possesses a capacity for action and a sustained attention to business, displaying strength, efficiency and self-control. Decision-making in conflict situations presents little difficulty for him, since he sees the organization's values as decisive. He regards his subordinates with detachment, and views men "as instruments, as pawns to be manipulated in a master plan," and he "enthrones administrative, keeping-the-organization-going skills and values [p. 179].

Deference to Superior Authority

The promotionally aspiring individual, in competition with others for appointment to a higher position, must impress his superiors who have the ability to satisfy his desires for advancement. In doing so, it is important for him not to antagonize those who decide who will be promoted. Thus, unless the organization makes a practice of openly encouraging and rewarding autonomy, divergent thinking, and activity that is governed primarily by a loyalty to the client rather than to the organization, it is safest, in the interests of promotional ambitions, to conform to organizational expectations and to respect superior authority.

According to Presthus (1962, p. 196), "the most significant item in the upward-mobile personality is his respect for authority." Elsewhere he states:

> A related upward-mobile skill is the careful avoidance of anything controversial. A major objective is to avoid prejudicing any future career opportunity [p. 188].

In idntifying with the organization, the upward-mobile internalizes the organization's values, which thus become premises of his actions. In Presthus' view, the ability to identify strongly with the system is "highly productive in personal terms, since it qualifies the upward-mobile for the organization's major rewards [p. 168]."

In exploiting the visibility system of the educational organization, the individual who possesses strong orientations towards promotional mobility may frequently exhibit many of the outward signs of a professional attitude. To enhance his appearance of promotion-suitability, he may join professional associations, subscribe to professional journals, write and present papers, and undertake studies leading to further qualifications. The key distinction between the behaviour of the "true" professional, and the "pseudo-professional" who takes on the outer coverings only, in a desire for hierarchical advancement, lies in the

attitude displayed towards superior authority. While the true professional puts the interest of the client first, and is ready to act autonomously, the behaviour of those who strongly aspire to advancement is likely to be more superior-authority oriented, deferring to those at higher levels of the hierarchy, and extending primary loyalty to the organization. As Presthus points out, a distinction exists between the upward-mobile's values and his behaviour. "He can usually assume the appropriate roles, whether or not he identifies with the underlying ideals [p. 169]."

Hypothesis

By relating the central problem to the conceptual framework and to evidence from related research a major research hypothesis was developed, namely that school personnel with high promotional aspirations emphasize deference to superior authority and the Initiating Structure dimension of leader behaviour, and de-emphasize Consideration, in their role perceptions.

Testing the Hypothesis

The experimental sample consisted of 1,069 teachers, 65 vice-principals and 67 principals, in a proportionally stratified, randomly selected representative group of seventy-one schools from the nine school districts of a Western Canadian metropolitan area. Four well-known and widely used social science research instruments were employed to gather data which were then analysed by Multiple Linear Regression techniques, Analysis of Variance, and Newman-Keuls Tests of Ordered Means.

The Leader Behaviour Description Questionnaire (LBQD)[1] was used to derive subordinates' perceptions of the actual leader behaviour of their immediate superiors, while two parallel forms of the LBDQ-Fleishman's Leadership Opinion Questionnaire, and the LBDQ "Ideal" Form—were used to measure perceptions of the leader behaviour deemed appropriate for the present positions of administrators and teachers respectively. The investigation differed from many previous studies which have employed the LBDQ, in that the focus was upon individual perceptions of leader behaviour. No attempt was made to sum and

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[1] Although the LBDQ Form XII has gained considerable popularity and has been used in many recent investigations in educational settings, it was decided instead to employ the earlier LBDQ in this study, for a number of reasons:

(*a*) The LBQD XII has a lower reported reliability of subscales than the LBQD.

(*b*) Recent investigations by Punch and Brown have indicated that the twelve subscales of the LBQD Form XII, which were intended to encompass the entire domain of perceived leader behaviours reduce to two factors—"System Orientation" and "Person Orientation," which bear a significant resemblance to Initiating Structure and Consideration.

(*c*) The LBQD's shortness, with only 40 items, as compared with the LBQD XII's 100 items provided an important utilization reason for its choice in preference to the later instrument.

(*d*) The LBQD is available in two alternative forms, which may be employed to measure perceptions of appropriate leader behaviour.

average perceptions to obtain composite staff scores, nor were *perceptions* of leader behaviour equated with *actual* leader behaviour itself.[2]

Nine items selected from the Professional Role Orientations Scale by Corwin (1964) were used to measure deference to superior authority. As pointed out earlier, an individual's readiness to subscribe to professional journals and belong to professional organizations are not necessarily accurate indicators of professionalism, particularly as they provide opportunities to gain visibility, for those who aspire to promotion. While it is granted that professional subscriptions and memberships are likely to accompany client loyalty, autonomy, and esoteric competence in the behaviour of a truly professional practitioner, it is argued that the attitude towards the organization and hierarchical authority most effectively discriminates between the true professional and the one who is seeking primarily for visibility. Accordingly, items in the Corwin scale referring to professional associations, journal subscriptions, opinions on standards of entry to the profession, and professional competence were not scored. The remaining items focussed upon the extent to which the respondent was ready to commit himself to actions which were in accord with accepted notions of professionalism, but which involved the necessity of disregarding superior authority. In assessing the extent of the respondent's agreement with statements that suggested the need to pursue an autonomous profesisonal course of action, even in the face of opposing demands, orders, regulations or superordinate expectations, these remaining items were used to determine the level of deference to superior authority.

The Mobility Achievement Scale was employed to reveal the level of promotional aspirations possessed by teachers, vice-principals, and principals. This instrument provides a measure of respondents' attitudes towards occupational mobility. Seeman (1958, p. 633-642; Neal & Seeman, 1964, p. 219), the originator of the scale, describes its purpose in the following way:

> The scale is conceived as a measure of the relative reward value the individual places on occupational mobility [p. 633]."

The fourteen-item scale offers the respondent a choice between occupational mobility and a series of other values such as friendship ties, family values, health or intrinsic work satisfaction. The items measure the extent to which respondents place the value of organizational ad-

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[2] For examples of such criticisms of the common practice of equating leader behaviour with perceptions of leader behaviour and the danger of "halo effect" through averaging out individual perceptions, see: D. A. Erickson. The school administrator. *Review of Educational Research*, 1967, Vol. XXVII, 417-432, and T. B. Greenfield. Research on the behaviour of educational leader: Critique of a tradition. *Alberta Journal of Educational Research*, 1968, Vol. XIV, No. 1, 55-76.

Greenfield's further criticism that too many studies have employed LBQD data as predictor variables while investigating the relationships between leader behaviour and such output variables as morale, satisfaction, and educational achievement, would also appear to be satisfied by the research design of the present study. In this investigation, LBQD data were the dependent or criterion variables, with levels of mobility orientation providing the predictors.

vancement above other values in their hierarchy of goals. Scores on the Mobility Achievement Scale were utilized to provide three different predictor variables for analysis, as described below.

Promotion is usually accompanied by many changes; for example, changes in relationships with people, in job responsibilities, in the extent of authority and power held, and in social and work environments. These changes may be broadly categorized in terms of two dimensions of mobility: vertical mobility and geographical mobility. Vertical mobility, concerned with positional change in the organization's hierarchical structure, involves considerations of authority, autonomy, responsibility, prestige, reputation and aspirations of status betterment. Geographical mobility, on the other hand, relates to movement from one environment to another. This latter aspect of promotion often involves sacrifice for the aspiring organization member, since advancement may mean severing established ties in one community to become a stranger in another, often with family considerations subjugated to organizational demands. Both types of mobility require adjustments in personal relationships, and to some extent, sacrifice also. Thus, an individual's attitude towards promotion will be a function of his attitudes towards both vertical mobility and geographical mobility, and his level of promotional aspiration may be considered as a composite of these two interdependent sets of attitudes.

The Mobility Achievement Scale was divided, for purposes of analysis, into two seven-item sections, reflecting vertical and geographical mobility orientations. Separate analyses employing the vertical and geographical components of mobility attitudes, in addition to considering the total score, were undertaken because the locale of the study was a single large metropolitan region. Since as Ellis points out, most appointees to administrative ranks in Western Canadian school systems come from within their own systems, advancement may be attained in such a region with little necessity for geographical relocation. Thus it would be possible for respondents to have a strong desire for advancement, but to display a low level of commitment to geographical mobility, because they perceive that promotion will not necessarily require them to make many personal or family sacrifices, nor to endure the disadvantages of geographical movement.

The major statistical technique used to test for significant differences between the groups categorized in terms of strength of mobility orientations was Multiple Linear Regression Analysis, a powerful but conceptually simple operation involving vector operations and well suited to computer capabilities.[3] Although the Multiple Linear Regression technique is a highly robust statistical measure, at this stage of its development it can do no more than determine whether or not significant differences exist between groups. As yet, there is no follow-up test to

determine the origin of the difference from amoung the predictor variable groupings. For this reason, it was decided to apply One-Way Analysis of Variance followed by a Newman-Keuls Test of Ordered Means, wherever a statistically significant difference was indicated by Multiple Linear Regression.

The relationships between promotional aspirations and role perceptions were analysed for all three hierarchical positions (teacher, vice-principal and principal), in terms of both types of role perception (subordinates' perceptions of the actual leader behaviour of immediate superiors and perceptions of the appropriate leader behaviour for the positions presently occupied). The predictor variables were the three types of mobility attitude (total level of promotional aspirations, vertical mobility attitude and geographical mobility attitude), while the criterion variables were deference to superior authority and both dimensions of leader behaviour (Initiating Structure and Consideration). In all, forty-five separate Multiple Linear Regression Analyses were undertaken.

Findings

Analysis of the data yielded highly significant support for the hypothesis, particularly as it related to the administrator group. Vice-principals and principals with a strong desire for promotion placed significantly greater emphasis on deference to superior authority and the Initiating Structure dimension of leader behaviour, together with a significantly lower emphasis on Consideration, than their colleagues who did not possess strong promotional aspirations. The emphasis on Initiating

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[3] The technique is based on the use of linear combinations of sets of vectors to construct regression models, the general approach being to express a vector of the criterion variable as a linear combination of a set of predictor variable vectors. Assumptions underlying the Multiple Linear Regression approach are less restrictive than those of the more traditional models: for example, predictor variables are not assumed to come from multivariate normal distributions. A striking advantage of this technique is the ease with which additional vectors may be included as simultaneous controls for a number of variables. In this set of analyses, controls were established on the following variables while testing the relationships hypothesized: sex, age, academic and professional training, teaching level, marital status, teaching experience, desire for promotion, number of years in present position, type of school and size of school. Further variable control was applied through the delimitation of the investigation to a single large metropolitan set of closely related school districts. Such delimitation appeared necessary for the following reasons:

Gross (1963) has suggested that promotional aspirations may cause a desire to achieve visibility, resulting in differential role perceptions. The relationship between promotional aspirations and differential perceptions of role would therefore be most appropriately studied where there is the greatest need to achieve visibility—in the urban school system, where, as Ellis and Enns (1966, pp. 23-26) point out, the growth of large organizations and a large force of teaching personnel have resulted in keen competition for the relatively small number of administrative positions available. Secondly, the reward system, which acts as the intervening variable in an interaction between the organization's codified behaviour system, and the individual's personality, to produce a modified cognitive orientation to role (Abbott, 1965) is an important factor in any investigation of the relationship between promotional aspirations and role perception. Because remoteness, lack of community facilities, and other factors may lower the attractiveness of administrative positions in smaller non-urban systems, resulting in lessened competition for appointment, there may be wide variability in the reward systems applying in different locations. Not only are there likely to be variations in salary allowances, facilities and conditions, but differences may occur also in the qualifications demanded of prospective administrative appointees. Thus, locating the investigation in a single metropolitan set of school districts provided some measure of control over environmental and organizational differences, holding relatively constant the variables of promotional routes and conditions, incentives provided, requirements of qualifications and experience demanded for appointment to administrative positions, differing system size, differing educational philosophy.

Structure was evident not only in perceptions of the leader behaviour regarded as appropriate for the present position, but also in perceptions of the actual leader behaviour displayed by immediate superiors. Only in the relationships between principals' geographical mobility attitudes and perceptions of leader behaviour did the analyses fail to yield highly significant results.

Limited support for the hypothesis came from analysis of teacher data, with regard to perceptions of appropriate and actual leader behaviour. However, the hypothesized emphasis on deference to superior authority by teachers with high promotional aspirations was confirmed at high levels of significance for all predictor variables except geographical mobility attitudes.

Conclusions

Several important overall observations were drawn from analysis of the data:

(*a*) Level of promotional aspiration is a powerful indicator of administrators' role perceptions. Analysis revealed highly significant sets of relationships in all three categories of mobility orientations, in both dimensions of leader behaviour, and for both types of perception—of actual role behaviour, and of appropriate role behaviour.

(*b*) Of the three predictor variables, total, vertical, and geographical mobility orientations, the latter appears to be the weakest indicator of role perceptions, possibly because highly aspiring personnel do not need a strong commitment to geographical mobility in order to achieve promotion in a large urban system.

(*c*) Administrators with strong aspiration for further advancement hold unique perceptions of both their own ideal role behaviour and the actual role behaviour of their immediate superiors. They place emphasis on deference to superior authority and Initiating Structure activities; and de-emphasize Consideration. Thus, level of promotional aspiration is inversely related to perceptions of Consideration, and directly related to perceptions of Initiating Structure.

(*d*) The criterion variable for which promotional orientation is most highly predictive is deference to superior authority.

(*e*) Differences in promotional aspiration are much more pronounced at the administrative level, than among the teacher respondents.

Implications

The conclusions presented above were derived from evidence gathered in a single region. Although the experimental sample was representative of the area under study, limiting the investigation to one contiguous set of urban school districts means that the implications which follow are, strictly speaking, valid only for the population under

study. With caution however, their applicability may be extended to other similar settings.

Perhaps the most obvious implication is the need for both administrators and teachers to be alert to the complexities of perception, and to be aware of the possibilities of misperception in organizational relationships. The study demonstrated that quite marked differences in perception exist between individuals who possess strong aspirations for advancement and those who do not have the same desire for promotion. More widespread recognition that variations in perception exist among members of a school staff would do much to reduce conflict and limit the dysfunctional effects of misunderstood purposes. Concrete steps to reduce the possibility of mispreception could be instituted through the positive encouragement of two-way communication, and more explicit articulation of role expectations.

Apparently, the system-oriented values loom large in the perceptions of those who aspire to promotion, particularly those who already hold administrative positions. There are a number of possible reasons for this. It may be that goal-achievement and task-orientation are more explicitly emphasized by the superordinate authorities as criteria for administrative success, than criteria relating to group maintenance and professional attitudes. It may be that Initiating Structure appears to dominate the role behaviour of those at higher levels of the hierarchy. As a result, the ambitious subordinate, realizing that his advancement depends upon the approval of persons occupying higher positions, may unconsciously slant his role perceptions and therefore his behaviour towards a "system orientation" rather than a "person orientation." Or it may even be that he deliberately models his attitudes in terms of what he perceives to be favored by his superiors, so that a display of the "right" kind of behaviour may lead to selection.

It seems quite likely that in the absence of clearly defined statements of the criteria to be used for selection, aspiring individuals will "play safe" by adopting behaviour and attitudes with an organizationally oriented bias. If goal achievement, task orientation and formal structure are the most specifically emphasized organizational expectations, they will tend to shape the most visible behaviours of ambitious subordinates. As a result, without an explicit stress on the importance of person-oriented, group maintenance behaviours, the system may unwittingly perpetuate a succession of "organization men" as administrators.

Although some recent research has indicated that the perceived frequency of leader behaviour is of greater importance in job satisfaction and overall school performance, than type of leader behaviour (Anderson & Brown, 1966), nevertheless there is evidence that group acceptance of the leader remains the crucial variable. If a teaching staff accepts the organizational "head" as their leader, then they will accept his leader-

ship initiatives even to the point of directiveness (McNamara & Enns, 1966). However, with increasing professionalization in the teacher group, the conditions under which school personnel will accept an appointed administrator as leader are presently undergoing modification. Current trends toward greater teacher participation in decision-making, policy formation by consensus, collegial organization of schools, and emphasis in the supervisory process upon motivation and stimulation, indicate the need for Consideration and autonomy in the future leader behaviour of school administrators, accompanied by a corresponding de-emphasis on deference to superior authority.

In summary, the evidence suggests a number of things. If expectations and selection policy criteria are not clearly stated, those who desire promotion may consciously or unconsciously assume that their best chances of benefiting from the organization's reward system lie in adopting organization-oriented values. This may prove increasingly dysfunctional in the presently evolving type of school organization. Unless efforts to clarify these matters are more effective in the future, appointment to administrative positions will depend to often upon proficiency in providing superiors with a show of what they seem to want to see, rather than upon actual professional competence.

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BOOK REVIEW

SOCIAL FOUNDATIONS OF CANADIAN EDUCATION: A BOOK OF READINGS

Edited by Anand Malik. Prentice-Hall of Canada Limited, 1969.

A very successful plot one may use whenever there is a group of educators heatedly discussing the social foundations of Canadian education, is to ask them to name two or three educational philosophers in Canada who have given any great impact or direction to our educational systems. The discussion will invariably disintegrate, or rapidly assume a new theme. With this in mind the reviewer approached this new publication with such a promising title, for Editor Malik had to choose those writers he felt who are now most influential in Canadian education. All the writers included, except two, may be identified as Canadian, and these two exceptions are American. The first, Seymour Martin Lipset, resided in Canada to complete a definitive study of the social movement in Saskatchewan, and his article on the absolute and relative value differences between Canada, the United States, Great Britain and Australia may reflect this experience. John M. Culkin has written on the recent Canadian phenomenon, Marshal McLuhan, whose nationality may have met the criterion for inclusion in this book.

The remaining contributors present a very interesting "mix," which deserves at least a brief analysis. Classifying the writers by their province of residence reveals a most surprising imbalance: *British Columbia*: Dean Neville V. Scarfe (three articles); *Alberta*: Dean H. T. Coutts (two articles), Sociologist C. W. Habert and Anthropologist C. S. Brant (joint authors), W. H. Worth, L. W. Downey; *Ontario*: Dean David Munroe, President Murray G. Ross, Sociologist John Porter (two articles) and, tentatively submitted by this reviewer, The Economic Council of Canada; *Quebec*: the Very Reverend Henri Légaré; and *Prince Edward Island*: Principal Frank MacKinnon. The preponderance of writers from the West either indicates the bias of the editor, or the simple fact that whatever effect present Canadian educational leaders are having on Canadian education, the greater thrust is coming from Western Canada. Editor Malik does not submit his rationale or criteria for his choice of articles for this anthology.

Other observations may be made about this particular choice of authors. The majority of writers have been associated with teacher education institutions, but none of them has been identified specifically with the history, philosophy, or sociology of education, or generally with

the social foundations of education. The philosophical bases in which these articles are rooted can be ascertained by the footnotes and references used by the authors. Here is where one discovers the influence of American philosophers and writers such as John Dewey, Jerome Bruner, James Conant, Jacque Barzun, and Jacque Maritain, and the American Education Policies Commission; and, to a lesser extent, such British writers as C. P. Snow, M. V. C. Jeffreys, A. N. Whitehead, and George Baron. The one article which stands out, almost incongrously, from all others is "The Primary Ends of Education," written by the Very Reverend Henri Légaré. First, the statement has a noticeably different philosophical base, but secondly, it apparently represents the other stream of Canada's duality of races and cultures. The article stands alone to remind the reader that there is in Canada another set of voices in Education.

The editor has attempted to collect a set of articles which deal with the basic social, economic, ethnic, and historical backgrounds of Canadian education for students in teacher education institutions. As such, this could prove to be a useful teaching device for it brings together in one slim volume this particular collection of recent articles for the first time. The editor has added a brief introductory statement to each section, and an overly-ambitious list of suggested readings to conclude the book. This publication may prove quite popular in educational foundation classes in Faculties of Education in Western Canada.

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